

The second is the extremely unfavorable conditions in the Bermudas for amphibians. The limestone of the Islands is so porous that the rain water which falls on the land quickly seeps back to the sea. There are no streams and no permanent pools. The tadpoles of the Great toad have become able to develop in brackish water. In *E. johnstonei* the entire larval development takes place in the egg, and the frog hatches out in the adult form. All that is necessary therefore is that the eggs be laid in moist places—as under leaves and stones.

The first two species grew in numbers rapidly within a few years after introduction, but later gradually established a balance at somewhat lower numbers.

#### GONADS AS CONTROLLERS OF SOMATIC AND PSYCHICAL QUALITIES

Moore (J. Exp. Zool., May 1919) reports experiments on rats confirming in part Steinach's conclusions respecting the effect of grafting ovarian tissues in completely castrated males. Steinach found that such "feminized males" behaved more like females than males both physiologically and psychically. Growth of mammary glands and the secretion of milk were noted in such males. Similarly females in which testicular tissue was substituted for the ovaries resembled males both in body and temperament.

In these grafting experiments two distinct changes are wrought:—the native sex bodies are removed, and bodies of the opposite sex are inserted. It is necessary therefore, to observe as controls both uncastrated animals, and castrated ones into which no exogenous elements have been introduced.

The distinguishing characteristics of the sexes in the white rats are not sharply marked in features other than the sexual organs themselves. The growth curves of weight and body length differ somewhat in males and females, the male being somewhat higher. Castration of male rats seems not to modify the growth curve, while spaying the female increases the curve over that of the normal female. Hair, mammary glands, changes in skeleton, and fat deposit have all been suggested as presenting differences. The author, however, feels that there is too much variation in all these things for them to have any exact value as criteria. He holds that the characteristic *behavior* of the sexes gives much better means of

measurement than the features mentioned. This would include mating reactions, rivalry and fighting, parental behavior toward young, and the like.

Moore finds definite evidence that masculinized females show exact male copulatory sex reactions and that feminized males show a tendency toward maternal behavior with the young. The interchanged sex hormones appear therefore to modify the psychic nature of one sex in the direction of the other.

#### CONTINUOUS VARIATION, AND ITS INHERITANCE IN *PEROMYSCUS*

Sumner (Amer. Nat. 1918, p. 177; 290; 439) finds evidence of continuous variation, subject to selection and to blending in inheritance, as well as evidence of other variations which are discontinuous and behave in breeding in accordance with Mendelian expectations in four local races of the wild deer-mouse *Peromyscus maniculatus*. These continuous variations relate both to pigment and to measurable structural features. These observations furnish cogent materials for further denial of the all-sufficiency of the extreme "Mendelian-mutation-pure-line" interpretation of evolution.

#### MOULT AND REGENERATION OF PELAGE IN DEER-MICE

Collins (Jour. Exp. Zool., Oct 1918) records observations on the normal moult of several varieties of deer-mice and on regeneration of the pelage after artificial removal.

The general body is destitute of hair and pigment at birth. The upper parts of the body begin, on the second day, to assume a bluish-black tinge and the hair begins to come thru the skin. The ventral white hair begins to show a day or two later. The characteristic juvenal pelage is attained in four or five weeks. This is made up of a thin coat of long and coarse overhair, filled between with a fine soft underfur. The hairs of the underfur are agouti, slate colored at base, a narrow intermediate band of pale mouse gray near the tip, and a black tip. The overhairs lack the intermediate band, - not being agouti. The ventral surface is similar except that the tips of the hairs are white. The line between the deep gray of the back and the white of the belly is very sharp.

The transition to the post juvenal pelage begins at age of six weeks and requires about eight weeks for completion. It begins to appear at the throat and proceeds dorsally and anteriorly, then